

REMARKS

Claims 1-11 and 13-21 are pending in the present application. Claims 1-3, 11 and 13 have been amended. Claims 20 and 21 have been added. Claim 1 has been amended to more clearly describe “one” and “the other” as suggested by the Examiner. Additionally, claims 1, 3, 11 and 13 have been amended by changing the upper limit of R^5 to C_{12} . Support for this amendment can be found in Examples 1-6 of the specification, wherein the R^5 group within component B1 contains 12 carbon atoms; and Example 7, wherein the R^5 group within component B2 contains 10 carbon atoms. Claim 2 has been amended to more specifically express the amount of ammonium salt (A) and phosphate salt (B). Support for this amendment can be found in Table 1, Example 1 (components A1 and B1). This also supports the subject matter of new claim 20. New claim 21 is supported by Example 3 of Table 1. Accordingly, no new matter has been added by way of the above amendments.

Issues under 35 U.S.C. § 112 Second Paragraph

Claims 1-19 have been rejected under 35 U.S.C. § 112, 2nd paragraph as containing indefinite subject matter. The phrase “one of which constitutes 20 to 80 weight percent and the other constitutes 80 to 20 weight percent” is at issue since it allegedly lacks antecedent basis. Claims 1 and 11 have been amended to recite “wherein one of the quaternary ammonium salt (A) and the phosphate salt (B) constitutes 20 to 80 weight percent and the other of the quaternary ammonium salt (A) and the phosphate salt (B) constitutes 80 to 20 weight percent...” Accordingly, the phrase now clearly describes what is intended by “one” and “the other” within the claim. Applicants respectfully request that this rejection be withdrawn.

Issues under 35 U.S.C. § 103(a)

Claims 1-3, 5-13 and 15-19 have been rejected under 35 USC § 103 as being obvious over Iwata et al. (US 6,436,855) in view of Seugnet (US 4,118,327).

Claims 4 and 14 have been rejected under 35 USC § 103 as being obvious over Iwata et al. (US 6,436,855) in view of Seugnet (US 4,118,327) further in view of Nohr et al. (US 4,920,168).

These rejections are respectfully traversed. Reconsideration and withdrawal thereof are requested in view of the amendments and following comments.

Applicants' Invention

Applicants' invention is directed to a water-permeable agent comprising a quaternary ammonium salt (A) and a phosphate salt (B). In one embodiment (claim 1), the quaternary ammonium salt contains two aliphatic hydrocarbon groups having 8 to 18 carbon atoms (R^1 and R^2) and two additional groups (R^3 and R^4) selected from aliphatic hydrocarbon groups having 1 to 3 carbon atoms, hydrogen or hydroxyalkyl groups having 1 to 3 carbon atoms. In another embodiment (claim 11), the quaternary ammonium salt contains one aliphatic hydrocarbon group having 19 to 24 carbon atoms (R^1) and three additional groups (R^2 , R^3 and R^4) selected from aliphatic hydrocarbon groups having 1 to 3 carbon atoms, hydrogen or hydroxyalkyl groups having 1 to 3 carbon atoms.

Applicants' invention offers an improvement over the prior art since the quaternary ammonium salt contains long-chain aliphatic hydrocarbon groups but is still easily dissolved as a

component of the water-permeable agent. Consequently, the water-permeable agents of the invention exhibit both initial water permeability and permanent water permeability.

Iwata et al.

Iwata is directed to a fiber-finishing agent which contains a quaternary ammonium phosphate salt. The salts of Iwata differ from those of Applicants' invention in at least these three different features:

1. Iwata fails to teach ammonium salts containing C_8-C_{18} aliphatic hydrocarbon groups in the positions corresponding to Applicants' R^1 and R^2 of formula (I) in claim 1 and ammonium salts containing $C_{19}-C_{24}$ aliphatic hydrocarbon groups in the position corresponding to Applicants' R^1 of formula (I) in claim 11;
2. Iwata fails to teach an ionic residue since the quaternary ammonium salt and the phosphate salt are coupled together; and
3. Iwata fails to describe the relative percentages of the ammonium and phosphate salts in the composition.

As Applicants will demonstrate, these deficiencies are not corrected by the combination with Seugnet et al.

Seugnet et al.

Seugnet is cited to correct the deficiencies of Iwata. Seugnet describes aqueous fabric-softening agents which can be added to the rinse cycle of a washing machine. The phosphate salts of Seugnet shown in formula (I) and formula (II) contain alkyl groups of 14 to 20 carbon

atoms (R^1). By contrast, the phosphate salts of the invention contain, in the corresponding position, aliphatic hydrocarbon groups of 6 to 12 carbon atoms (R^5). Additionally, the phosphate salts (III) and (IV) of Seugnet are outside the scope of the invention since the value for m in Applicants formula (II) is 2 to 15. To fall within the scope of salts (III) and (IV) of Seugnet, the value of m in Applicants' formula (II) would have to be 0. Finally, Seugnet does not address initial or permanent water permeability improvement.

Combination of Iwata et al. and Seugnet et al.

The three distinctions between the invention and Iwata set forth above will now be addressed individually.

Regarding item (1), the Examiner has cited where Iwata teaches "that when the number of carbon atoms is substantially less than 12, friction between the fibers increases which results in degradation of the fiber opening and the hydrophilicity of the fiber." The Examiner further notes that if longer chain hydrocarbons are used, then hydrophobic qualities are increased ("a long alkyl group tends to make the fiber hydrophobic" at col. 3, lines 55-56). From this it is concluded that Iwata teaches that one of ordinary skill in the art would be motivated to use a combination of long- and short-chain aliphatic groups in order to both attract to the hydrophobic fiber and impart hydrophilic properties. However, Applicants note that this discussion in Iwata is directed to the hydrocarbon chain represented by R of formula (1) which is a polyoxyethylene alkyl ether and not the ammonium salt of formula (2) on which the rejection relies. Thus, there is no foundation for the assumption that the skilled artisan would be motivated to use both long- and short-chain aliphatic groups in the ammonium salt.

Absent a suggestion in Iwata to alter the quaternary ammonium moiety, the skilled artisan would expect the combination of three short-chain aliphatic hydrocarbon groups (C_1 - C_3) and one long-chain aliphatic hydrocarbon group (C_5 - C_{18}) to be the optimum combination. However, as Applicants have discovered, the use of two long-chain aliphatic hydrocarbon groups (C_8 - C_{18}) or one longer-chain aliphatic hydrocarbon group (C_{19} - C_{24}) in the quaternary ammonium salt can lead to improved initial and permanent water permeability. This is evidenced by Comparative Example 5 in Applicants' Table 2, wherein component A4 is a quaternary ammonium salt (lauryl-trimethyl ammonium chloride) which contains three short-chain aliphatic hydrocarbon groups and one long-chain aliphatic hydrocarbon group as in Iwata. As the data demonstrates, when the quaternary ammonium salt contains only one long-chain (C_5 - C_{18}) aliphatic hydrocarbon group as described in Iwata, the permanent water permeability is unsatisfactory, and the initial water permeability is poor. When these results are compared to the results obtained when using the agents of the invention, it is evident that the use of Applicants' quaternary ammonium salt offers an unexpected improvement over the prior art. See Table 1, Examples 1-7 of the present specification where both the initial and the permanent water permeability exhibited by the agents of the invention are shown to be superior over the comparative examples. As stated in the specification, Applicants have found that it is the synergistic effect of the particular components in specific ratios which result in the improved water permeability observed in the agents of the invention. The fiber-finishing agents of Iwata are designed to address only initial water permeability while permanent water permeability is not addressed at all. Seugnet does not discuss either initial or permanent water permeability, and therefore clearly is not concerned that the fabric-softening agents described therein enhance these characteristics.

The assertion that the combination of Iwata and Seugnet teaches the skilled artisan to use two long-chain aliphatic hydrocarbon groups and two short-chain aliphatic groups in the ammonium salt (as in Applicants' invention) is based on the reasoning that (a) Iwata teaches the skilled artisan to use a combination of long- and short-chain hydrocarbon groups in the ammonium salt, and (b) Seugnet teaches the use of two long-chain and two short-chain hydrocarbon groups in the ammonium salt, therefore the skilled artisan would be motivated to substitute the ammonium salt of Seugnet for the ammonium salt of Iwata. Although assumption (a) is flawed for the reasons discussed above, even if it was assumed to be valid the invention would not be obvious in view of the combination of Iwata and Seugnet based on the nature of the quaternary ammonium phosphate salt of Iwata as now explained.

If the quaternary ammonium moiety of Iwata's formula (2) is altered to contain two long-chain aliphatic hydrocarbon groups and two short-chain aliphatic hydrocarbon groups as the rejection suggests the skilled artisan would be motivated to do based on the teaching of Seugnet, then it would be both expected and realized by those skilled in this art that the resulting quaternary ammonium phosphate salt would become insoluble in the fiber-treating agent and separate out. As a result, both initial water permeability and permanent water permeability deteriorate and become unsatisfactory for the intended purpose. For this reason, the inventors in Iwata selected a quaternary ammonium moiety which contains three short-chain aliphatic hydrocarbon groups and only one long-chain aliphatic hydrocarbon group. This demonstrates the unexpected advantage of Applicants' invention wherein the quaternary ammonium salt (A) contains two long-chain and two short-chain aliphatic hydrocarbon groups or one longer-chain and three short-chain aliphatic groups but still imparts to the water-permeable agent improved

initial and permanent water permeability. Thus, the skilled artisan would not be motivated to substitute the quaternary ammonium salt as described in Seugnet into the ammonium phosphate salt compound of Iwata.

Regarding item (2) above, the rejection asserts that while Iwata teaches the ammonium and phosphate salts coupled together in a single compound (as opposed to Applicants' invention where these are separate components in the water-permeable agent), Seugnet teaches that "ion residues such as halide ions can be used in the quaternary ammonium salt" and that the quaternary ammonium salts can be used in combination with long chain alkyl phosphates (referring to the phosphate described at col. 5, lines 31-34 of Seugnet).

Initially, Applicants point out that when the specific quaternary ammonium salt (A) and the specific phosphate salt (B) as instantly claimed are both part of the water-permeable agent of the invention then improved card characteristic properties (i.e. card permeability and antistatic properties), initial water permeability and durable hydrophilic nature are exhibited. These advantages are not observed when a quaternary ammonium phosphate salt (as used in Iwata) is incorporated into a water-permeable agent.

If the skilled artisan were to combine Iwata and Seugnet such that Iwata's quaternary ammonium phosphate salt was considered the phosphate salt (B) of the invention and Seugnet's quaternary ammonium salt was considered the ammonium salt (A) of the invention, then the combination still falls short of Applicants' invention. In the present invention, the ionic residue Y of the phosphate salt (B) is selected from the group consisting of sodium ion, potassium ion, ammonium ion, diethanol ammonium ion, and triethanol ammonium ion. In this scenario of the combination of references, Iwata's quaternary ammonium moiety would correspond to ionic

residue Y in the phosphate salt of the invention. However, a quaternary ammonium ion is not embraced within Applicants' definition of Y. Thus, if Iwata and Seugnet are combined in this manner, the phosphate salt contributed by Iwata is not within the scope of Applicants' invention since Applicants' phosphate salt (B) does not encompass quaternary ammonium phosphate salts. If a phosphate salt was employed wherein the ionic residue Y was a quaternary ammonium ion, then the card permeability would deteriorate. Therefore, Applicants have used phosphate salt (B) having a specific ionic residue Y in combination with the quaternary ammonium salt (A) in order to achieve the advantageous results exhibited by the water-permeable agent of the invention.

Regarding item (3) above, the relative percentages of the ammonium and phosphate salts in the composition of Iwata are not described (since they are not separate compounds). Seugnet describes the weight percentage range of quaternary ammonium salt and phosphate salt as 5% to 95% which is outside the scope of the invention. The basis of the rejection lies in the assumption that the claimed range would be obtained through routine experimentation. However, since there is no motivation to combine Iwata and Seugnet for the reasons set forth above, and since the combination of the references would destroy the teachings therein, it follows that the skilled artisan would not be motivated to routinely experiment with the goal of optimizing the relative amounts of these ammonium and phosphate salts.

Applicants' claim 2 specifies that the phosphate salt (B) is present at 30 to 60 weight % based on the water-permeable agent, and further requires that the quaternary ammonium salt (A) be present at 40 to 80 weight % and the phosphate salt (B) be present at 60 to 20 weight % based on the total of ammonium salt (A) and phosphate salt (B). By contrast, the composition of Iwata

contains as a main component a polyoxyethylene alkyl ether (component A), while the ammonium phosphate salt (component B) is present only at 10 to 40 weight %. Although it is difficult to compare the quaternary ammonium phosphate salt of Iwata to the individual quaternary ammonium salt and phosphate salt of the present invention, it is clear that the ammonium phosphate salt of Iwata is not the main component of the Iwata composition since it is present in (at most) an amount of 40 weight %. In the water-permeable agent of the invention, the combined amounts of quaternary ammonium salt and phosphate salt exceed 40 weight %. Thus, the subject matter of claim 2 is not obvious in view of the teachings of Iwata and Seugnet.

Combination of Iwata et al. and Seugnet et al. with Nohr et al.

Regarding claims 4 and 14, the rejection cites Nohr et al. to teach Applicants' R^7 -Z group in formula (III), since Iwata teaches a polyorganosiloxane (formula (4)) that does not contain the R^7 -Z group. However, the invention of Nohr is directed to a thermoplastic compound, which can be molded by melt extrusion. A silicon-containing compound is disclosed, which is an additive contained in the thermoplastic polymer when it is molded by melt extrusion. The skilled artisan would not look to thermoplastic polymer additives in the melt extrusion molding art when searching for useful components in a fiber-finishing agent. Nor would the skilled artisan expect water permeability to be a concern in the invention of Nohr. Accordingly, the combination of Nohr with Iwata and Seugnet is improper. However, even if the combination was proper, the overall teaching from the combination of these references would not embrace Applicants' invention.

In summary, it would not have been obvious to the skilled artisan to combine the teachings of Iwata and Seugnet and Nohr in order to arrive at Applicants' invention. In order to meet the requirements of instant claims 1 and 11, there must be (among other features) a quaternary ammonium salt (A) and a phosphate salt (B) which are within the scope of the description of claims 1 and 11.

If the quaternary ammonium phosphate salt of Iwata is viewed as the phosphate salt of the invention and is used together with the ammonium salt of Seugnet, then a *prima facie* case of obviousness has not been established since the ionic residue, Y, of Applicants' phosphate salt (B) does not encompass quaternary ammonium ions. If a quaternary ammonium ion is used as the ionic residue of the phosphate salt (as described in Iwata), then the resulting composition exhibits unsatisfactory permanent water permeability and the card permeability deteriorates as compared to the instant invention.

If the ammonium salt as described in Seugnet is substituted for the ammonium moiety in the quaternary ammonium phosphate salt of Iwata, such that the quaternary ammonium portion contains two short-chain and two long-chain aliphatic hydrocarbon groups, then the resulting product fails to render the claimed invention *prima facie* obvious for two reasons: (1) the combination is improper since the ammonium and phosphate salts are not two separate components as required by the invention; and (2) in this embodiment, the quaternary ammonium phosphate salt having two short-chain and two long-chain aliphatic hydrocarbon groups becomes insoluble in the fiber-treating agent and separates out resulting in a deterioration in permanent water permeability.

Applicants' again note the comparison between Comparative Example 5 and Applicants' invention in Tables 1 and 2 of the specification where the significance of utilizing the appropriate quaternary ammonium salt and the appropriate phosphate salt in specific proportions is demonstrated. The quaternary ammonium salt of Comparative Example 5 lacks the two short-chain and two long-chain (C_8 - C_{18} according to claim 1) aliphatic hydrocarbon groups, nor does it contain one longer-chain (C_{19} - C_{24} according to claim 11) aliphatic hydrocarbon group as claimed. Consequently, Comparative Example 5 exhibited inferior water permeability.

The many distinctions between Applicants' claimed invention and the teachings of Iwata and Seugnet are set forth below:

1. The composition of Iwata does not contain a quaternary ammonium salt and a phosphate salt as two separate components;
2. The quaternary ammonium moiety of Iwata's component B contains one long-chain (C_5 - C_{18}) and three short-chain (C_1 - C_3) aliphatic hydrocarbon groups instead of two long-chain (C_8 - C_{18}) or one longer-chain (C_{19} - C_{24}) groups as in the invention;
3. Iwata fails to describe the relative percentages of the ammonium and phosphate salts in the composition;
4. The phosphate salts of Seugnet shown in formula (I) and formula (II) contain alkyl groups of 14 to 20 carbon atoms (R^1), whereas the phosphate salts of the invention contain, in the corresponding position, aliphatic hydrocarbon groups of 6 to 12 carbon atoms (R^5);

5. The phosphate salts (III) and (IV) of Seugnet are also outside the scope of the invention since they would require the value for m in Applicants formula (II) to be 0 instead of 2 to 15 as claimed;
6. Seugnet describes the weight percentage range of quaternary ammonium salt and phosphate salt as 5% to 95% which is outside the scope of the invention;
7. Iwata and Seugnet fail to teach Applicants' R^7-Z group in the polyoxyalkylene-modified silicone of formula (III);
8. The skilled artisan looking for fiber-finishing agents would not look to Nohr to supply the teaching of the R^7-Z group since the silicon-containing compound of Nohr is an additive in a thermoplastic polymer which is molded by melt extrusion;
9. Seugnet fails to address initial or permanent water permeability.

The finding of obviousness asserted in the rejection relies on the skilled artisan picking and choosing select disclosures from these references in order to arrive at Applicants' invention. Citing references which merely indicate that isolated elements or features recited in the claims are known is not a sufficient basis for concluding that the combination of claimed elements would have been obvious. *Ex parte Hiyamizu* (BPAI 1988) 10 USPQ2d 1393. Accordingly, the only motivation for combining these references is based on hindsight gleaned from Applicants' own invention. "One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). "To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which

only the inventor taught is used against its teacher." *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983).

Inasmuch as Iwata fails to make the claimed invention obvious due to a variety of factors including (1) the chain length of the aliphatic hydrocarbon substituents in the ammonium moiety and (2) the fact that the quaternary ammonium and phosphate salts are coupled together, and since these deficiencies are not overcome by a combination with Seugnet and Nohr, Applicants assert that a *prima facie* case of obviousness has not been established with respect to Iwata in combination with Seugnet and Nohr. Applicants respectfully request that the rejection be withdrawn.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Marc S. Weiner, Reg. No. 32,181 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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